UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

JUN 21 1990

SUBJECT: Cleanup Level for Lead in Ground Water

FROM: Henry L. Longest, Director
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TO: Patrick M. Tobin, Director
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PURPOSE

This memorandum addresses the issue of a protective cleanup level for lead in ground water usable for drinking water, which is a major concern for several Superfund sites in Region IV.

OBJECTIVE

The objective of this memorandum is to recommend a final cleanup level for lead in ground water usable for drinking water which will meet the CERCLA requirement that all Superfund remedies be protective of human health and the environment.

BACKGROUND

The current Maximum Contaminant Level (MCL) for lead is 50 ppb and was promulgated in 1975 as an interim national primary drinking water regulation (NPDWR) under the Safe Drinking Water Act (SDWA). On November 13, 1985, the Agency began the process of revising this standard by proposing a Maximum Contaminant Level Goal (MCLG) as required by the SDWA (50 FR 46936).

On August 18, 1988 EPA proposed an MCLG for lead at zero and an MCL of 5 ppb (53 FR 31516). Also, since the primary cause of lead-contaminated drinking water is corrosion of lead-bearing pipes in public water supply (PWS) distribution systems and/or household plumbing, the proposed rule would direct PWSs to meet treatment technique requirements and to deliver public education to reduce and minimize exposures to lead in drinking water.

These requirements would be triggered when an action level is exceeded at consumers' taps throughout the water distribution system. The Agency proposed an action level of 10 ppb, on average, to trigger corrosion control and public education. Another lead action level of 20 ppb, measured at the 95 percentile of samples, was proposed as a trigger for public education.

The Agency is considering promulgation of treatment technique requirements which may include additional source water treatment, lead service connection replacement, and public education if lead concentrations at the tap exceed an action level. Any such technological treatment targets will provide substantial health protection. A final rule is being worked on, and is scheduled for promulgation in December 1990.

DISCUSSION

No cancer potency factor or reference dose has been promulgated for lead; therefore, an assessment of protective levels of lead in ground water that may be used for drinking water purposes will be based on current data. The Agency has identified 10 micrograms per deciliter (ug/dl) as a blood lead level of concern in young children. Blood lead levels above 10 ug/dl are associated with increased risks of potentially adverse effects on neurological development and diverse physiological functions.

Attached is available data that support the recommended final cleanup level for lead in drinking water at Superfund sites. This information includes the June 15, 1990, EPA draft final report entitled, "Contributions To a Risk Assessment For Lead in Drinking Water" and the June 1986, EPA draft final report entitled, "Air Quality Criteria for Lead" (Volume III of IV, p. 11-129). Based on these data, lead levels in drinking water of 15 ppb and lower should correlate to blood lead levels below the concern level of 10 ug/dl. The Agency estimates that steady exposure to a water lead concentration of 15 ppb would contribute, at most, 2-3 ug/dl to a child's blood lead. Sources of lead other than drinking water (e.g. food, air, soil, dusts) typically contribute approximately 4-5 ug/dl to children's blood lead. Accounting for the variability inherent in childhood behavior, nutrition, and physiology, it is estimated that total lead exposure, given 15 ppb in drinking water, would result in blood lead levels below 10 ug/dl in

roughly 99 percent of young children who are not exposed to excessive lead paint hazards or heavily contaminated soils. Therefore, a 15 ppb cleanup level would provide substantial health protection for the majority of young children. Most of the remaining lead problem will continue to be contaminated soils and old lead-painted housing.

In an April 10, 1989, Federal Register notice (54 FR 14316), EPA announced the availability of a guidance document and testing protocol entitled, "Lead in School's Drinking Water," to assist schools in determining the source and degree of lead contamination in school drinking water supplies and how to remedy such contamination. That document, which is also attached, recommends that schools take remedial steps whenever the lead level at any drinking water outlet exceeds 20 ppb.

RECOMMENDATION

Based on a review of these and other studies, it is recommended that a final cleanup level of 15 ppb for lead in ground water usable for drinking water is protective. If water used for drinking purposes subsequent to achieving the cleanup goal in the aquifer may need further treatment to account for lead contributions related to the distribution of water through pipes, the responsibility for this additional treatment or the replacement of lead-bearing water pipes lies with the persons who are using or distributing the water. A concentration of lead of 15 ppb in drinking water should generally correlate with a blood lead level below the concern level of 10 ug/dl. In some situations, lower cleanup levels may be appropriate based on site-specific factors, such as multiple pathways of exposure caused by lead from the site.

If the remedial action will include treatment and supplying water directly to the public for drinking water consumption, compliance with a 15 ppb action level should be met at 90 percent of the taps to ensure that the remedy is protective. When the lead NPDWR is promulgated, applicable or relevant and appropriate requirements of that rule should be met.

FUTURE GUIDANCE

After promulgation of the lead NPDWR, guidance will be issued discussing those provisions of the rule that may be applicable or relevant and appropriate for Superfund actions.

For further information, please contact Tish Zimmerman at FTS 382-2461 or Neilima Senjalia at FTS 475-7027.

DISCLAIMER

The recommendations in this document are intended solely as guidance. They are not intended and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party in litigation with the United States. EPA reserves the right to act at variance with these recommendations and to change them at any time without public notice.

Attachments

cc: Directors, Waste Management Division, Regions I, V, VII, VIII
Directors, Emergency and Remedial Response Division, Region II
Directors, Hazardous Waste Management Division, Regions III, VI, IX
Directors, Hazardous Waste Division, Region X